

PROPERTY PLANNING COMMON ELEMENTS

COMPONENTS OF MASTER PLANS

HABITATS AND THEIR MANAGEMENT

White Pine

Description

This forest type is comprised of >50% white pine. It can occur on a wide range of soils, moisture and nutrient gradients but occurs most commonly in areas of irregular glacial topography or mixed glacial features on dry, nutrient-poor soils (loamy sands or sands). Historically, white pine occurred in forests co-dominant with red pine (the “pineries”). These forests were widely distributed across northern Wisconsin but were most abundant in areas where lakes, rivers, streams, wetlands, or other natural barriers prevented wildfires from advancing unimpeded across large areas at frequent intervals. Periodic, lower-intensity fire that maintained pine dominance and reduced the abundance of competing hardwoods in the understory was the primary disturbance regime, with severe, stand-replacing fires occurring at intervals of many decades to several centuries. Canopy associates could include red oak, red maple, big-tooth aspen, trembling aspen, and white birch, with black cherry, white oak, northern pin oak, balsam fir, and jack pine occurring less commonly or rarely. The great “pineries” were heavily targeted during the severe, widespread logging that followed Euro-American settlement of Wisconsin in the mid-to-late 1800s, and were virtually gone by the end of the 19th century. The slash fires that followed this logging often burned stands of young, uncut pines, leaving limited or no pine seed source to recolonize the cut-over areas.

Today, white pine-red pine forests are greatly reduced in extent. The former “pineries” are now composed largely of the early-successional species that proliferated after the Cutover, particularly trembling aspen and white birch. Old-growth examples of white pine-red pine-dominated forest are exceedingly rare. Where second-growth stands occur, they are sometimes dominated by red oak. Other canopy associates in white pine-red pine forests are red maple and occasionally sugar maple, with paper birch, trembling aspen, and big-tooth aspen sometimes present. Common understory shrubs include hazelnuts and blueberries along with low-growing species like wintergreen and partridge-berry. Common herbs include wild sarsaparilla, Canada mayflower, and cow-wheat.

The most common associates in white pine stands are red pine, jack pine, aspen, white birch, red maple, red oak, northern pin oak, black oak, white oak, balsam fir, white spruce, and eastern hemlock. White pine can be found growing as a common to occasional associate in most of Wisconsin’s major forest types. It is also grown in plantations.

Ecological Landscape Opportunities

Ecological Landscape	Opportunity*
Northeast Sands	M
Northern Highland	M
Northwest Sands	M
Central Lake Michigan Coastal	I
Central Sand Plains	I
Forest Transition	I
North Central Forest	I



Ecological Landscape	Opportunity*
Northern Lake Michigan Coastal	I
Northwest Lowlands	I
Superior Coastal Plain	I
Central Sand Hills	P
Southeast Glacial Plains	P
Western Coulee and Ridges	P

*M = Major: major opportunity exists in this Landscape; many significant occurrences are recorded or restorations likely to be successful.

I = Important: several occurrences important to maintaining the community in the state occur in this Landscape.

P = Present: community is present in the Landscape, but better opportunities exist elsewhere.

Rare Species

Many Species of Greatest Conservation Need (SGCN) are associated with white pine-red pine forest based on the findings in [Wisconsin's 2015 Wildlife Action Plan](#). To learn more, visit the [Northern Forest communities page](#) and click on "Northern Dry-mesic Forest".

Threats

- Historically, white pine-red pine forests were maintained by ground fires of low to moderate intensity and frequency that kept understories relatively open and free of competing deciduous saplings and shrubs and facilitated pine regeneration. The absence of fire and resulting alterations in stand structure and composition (increase in deciduous undergrowth and species such as red maple that cast deep shade) have created conditions increasingly unfavorable for pine regeneration.
- White pine forests suffer from forest simplification (reduced species and structural diversity) as a result of past and current management practices, including fire suppression, harvest of most older and old-growth stands, and even-aged regeneration methods.
- Non-native invasive species, including buckthorns, Asian honeysuckles, garlic mustard, and common speedwell, are a threat to white pine, particularly in the central part of the state, and are increasingly moving northward.
- Fragmentation due to agriculture, residential development, and roads is a threat to white pine in certain parts of the state.

Management Techniques

- Overstory removal
- Seed Tree
- Shelterwood
- Group selection
- Patch selection
- Direct seeding and planting



- Site preparation
- Intermediate treatments
- Pesticide treatments
- Prescribed fire

Management Considerations

- Consider landscape context and pattern when managing for white pine. Where possible, manage for larger blocks; attempt to match stand boundaries to physiographic or edaphic features; increase connectivity between forest patches; and soften sharp transitions between forest types.
- Maintaining seedling and sapling stands at 700 stems per acre or greater can promote correcting of tip weevil damage.
- Pruning is recommended where managing for sawlogs is the objective, to increase sawlog grade and reduce blister rust infection.
- Shelterwood and seed tree methods often are used in conjunction with site preparation techniques for natural regeneration. Scarification to expose mineral soil in conjunction with a good seed crop may be necessary to promote germination.
- Increase species diversity in white pine stands by creating canopy openings, retaining other species at rotation to serve as seed sources, or including other species in plantings.
- In mixed pine stands containing a large percentage of trees other than pines, use group or patch selection harvest, shelterwood, or overstory removal of the other species to promote pine dominance.
- Leave scattered large white pine in many harvest areas if they are healthy and do not pose a risk to human or forest health.
- Use variable density thinning to increase structural complexity within stands, considering openings and patches of different ages and composition.
- Develop and maintain supercanopy trees, large trees, large cavity trees, large snags, and coarse woody debris to increase structural complexity within stands.
- Encourage and retain large white pine near wetlands and open water for use by eagles, ospreys, herons, and other birds.
- Reintroduce fire where feasible and safe. Prescribed fire can be an effective way to eliminate shrub and hardwood competition, reduce thick duff layers, and prepare mineral seedbeds.
- Consider natural regeneration methods.
- Apply extended rotation and managed old-growth techniques to some stands.
- Protect old-growth and relict stands.

